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Defect Spectroscopy with a High Energy Positron Beam

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Abstract:

We have developed a defect analysis capability based on a 3 MeV electrostatic accelerator. The high energy beam lifetime spectrometer is operational with a current of 500000 positrons per second. Positron lifetime analysis is performed with a 3 MeV positron beam on thick sample specimens at counting rates as high as 2000 per second. The instrument is being used for bulk sample analysis and analysis of samples encapsulated in controlled environments for in situ measurements. We will describe elements of the high energy beam and discuss uses of the instrument in studying defect distributions in composite materials and radiation damaged metals.
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